

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (~~Currently Amended~~~~Previously Presented~~) A method for extracting a component from a heap of material, the method comprising:

after the heap has been subjected to component extraction by heap leaching for some period of time, surveying the heap, the surveying comprising collecting data concerning properties within the heap and analyzing the data to identify portions of the heap deficient in extraction of the component in that the extraction of the component in the identified portions of the heap is low in comparison to average extraction of the component from the heap, the collecting data comprising a geophysical survey and the analyzing comprising analyzing data from the geophysical survey; and

subjecting the heap to selective remedial treatment, the selective remedial treatment comprising:

based on the surveying, selecting for remedial treatment an identified portion of the heap determined from the surveying to be deficient in extraction of the component in that the extraction of the component in the identified portion is low in comparison to average extraction of the component from the heap;

excavating a well into the identified portion of the heap; and

through the well, remedially treating the identified portion of the heap to improve the extraction of the component from the identified portion of the heap, the remedially treating comprising:

treating the identified portion of the heap, the treating comprising introducing treating solution through the well into the identified portion of the heap and dissolving into the treating solution at least a portion of the component from the identified portion of the heap;

prior to the treating, hydraulic fracturing the heap within the identified portion of the heap.

2. (Cancelled).
3. (~~Currently Amended~~~~Previously presented~~) The method of Claim 1-Claim 2, wherein the well is in fluid communication with the heap in multiple zones in the well; and the method comprises performing the treating separately on each of the zones.
4. (Cancelled).
5. (~~Currently Amended~~~~Original~~) The method of Claim 1-Claim 4, wherein the hydraulic fracturing comprises:
 - fluidly isolating a zone in the well in fluid communication with the heap;
 - initiating a fracture through injection under pressure of a fracture fluid into the heap at a location corresponding with the zone; and
 - propping the fracture open through deposition in the fracture of proppant particles transported through the well.
6. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1-Claim 4, wherein the well is in fluid communication with the heap in multiple said zones in the well; and the method comprises performing the hydraulic fracturing separately on each of the zones.
7. (Original) The method of Claim 6, comprising performing the treating separately on each of the zones.
8. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1-Claim 2, wherein the treating is performed without prior hydraulic fracturing of the identified portion of the heap.
9. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1-Claim 4, comprising collecting from the heap at least a portion of the treating solution containing dissolved component extracted from the heap and removing from the collected treating solution at least a portion of the dissolved component.

10. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1-Claim 4, comprising, after the treating, rinsing the identified portion of the heap, the rinsing comprising introducing rinse solution through the well into the identified portion of the heap to displace at least a portion of the treating solution containing dissolved component away from the identified portion of the heap.

11. (Original) The method of Claim 10, wherein:
the rinsing comprises dissolving at least a further portion of the component from the identified portion of the heap into the rinse solution; and
after the rinsing, collecting from the heap at least a portion of the rinse solution and removing from the collected rinse solution at least a portion of the further portion of the component.

12. (Previously Presented) The method of Claim 10, comprising further subjecting the heap to component extraction by leaching from the heap during at least a portion of the rinsing.

13. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1-Claim 2, comprising further subjecting the heap to component extraction by leaching from the heap during at least a portion of the treating.

14. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1-Claim 4, wherein the component is gold and the treating solution comprises a lixiviant for the gold.

15-18. (Cancelled).

19. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1-Claim 4, wherein the component is a base metal.

20. (Original) The method of Claim 19, wherein the base metal is selected from the group consisting of copper, nickel, zinc, lead, cobalt and iron.

21. (Original) The method of Claim 19, wherein the base metal is copper and the treating solution is an acidic sulfate solution.

22. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1-Claim 4, comprising:

sampling the heap during the excavating of the well; and
analyzing at least one property of a sample of the material obtained during the sampling.

23. (Original) The method of Claim 22, wherein:

the sampling comprises obtaining multiple said samples from different depths in the heap, different ones of said multiple samples obtained from different depths in the heap; and
performing the analyzing separately on each of the ones of the samples obtained from different depths.

24. (~~Currently Amended~~~~Previously Presented~~) The method of ~~Claim 1-Claim 4~~, wherein the surveying comprises forming test holes into different portions of the heap and determining a property of the heap at different lateral locations and different depths in the heap.

25. (~~Currently Amended~~~~Previously Presented~~) The method of ~~Claim 1~~~~Claim 4~~, wherein the surveying comprises a noninvasive data collection technique to determine a property of the heap at different locations in the heap and using that property during the analyzing the data to identify portions of the heap deficient in extraction of the component in that the extraction of the component in the identified portions of the heap is low in comparison to average extraction of the component from the heap.

26. (~~Currently Amended~~~~Original~~) The method of Claim 25, wherein the noninvasive data collection technique comprises ~~the a~~-geophysical survey.

27. (Original) The method of Claim 26, wherein the geophysical survey comprises a passive geophysical survey technique.

28. (Original) The method of Claim 27, wherein the geophysical survey comprises a gravity survey.

29. (Original) The method of Claim 27, wherein the geophysical survey comprises a magnetic survey.

30. (Cancelled).

31. (~~Currently Amended~~~~Previously Presented~~) The method of ~~Claim 1-Claim 4~~, wherein the material comprises at least one of an ore and an ore concentrate.

32. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1 - ~~Claim 4~~, wherein the heap has a depth of at least 300 feet.

33. (Cancelled).

34. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1 - ~~Claim 4~~ wherein the material comprises a metal-containing mineral material and the component is a metal.

35. (Previously Presented) The method of Claim 34, wherein the metal is gold and the method comprises:

leaching gold from the heap, comprising applying a leaching solution to the heap, the leaching solution comprising a lixiviant for the gold.

36-39. (Cancelled).

40. (Original) The method of Claim 34, wherein the metal is a base metal.

41. (Original) The method of Claim 40, wherein the base metal is copper.

42. (Original) The method of Claim 40, wherein the base metal comprises one or more than one of nickel, zinc, lead, cobalt and iron.

43. (Original) The method of Claim 34, wherein the metal is uranium.

44. (Original) The method of Claim 34, wherein the metal is sodium.

45. (Previously Presented) The method of Claim 34, wherein the metal is phosphorus.

46. (Original) The method of Claim 34, wherein the metal is silver.

47. (Cancelled).

48. (~~Currently Amended~~~~Previously Presented~~) The method of Claim 1 - ~~Claim 4~~, wherein the remedially treating comprises modifying pH in the identified portion of the heap.

49-50. (Cancelled).

51. (~~Currently Amended~~~~Previously Presented~~) The method of ~~Claim 1~~-~~Claim 4~~, comprising excavating a plurality of the wells into a plurality of identified portions of the heap and performing the remedially treating separately through different ones of the wells.

52. (~~Currently Amended~~~~Previously Presented~~) The method of ~~Claim 1~~-~~Claim 2~~, comprising prior to the remedially treating, extracting at least a portion of the component from the heap by heap leaching.

53. (Previously Presented) The method of Claim 52, comprising further subjecting the heap to component extraction by heap leaching during at least a portion of the remedially treating.

54. (Previously Presented) The method of Claim 53, comprising further subjecting the heap to component extraction by heap leaching after the remedially treating.

55. (Previously Presented) A method for extracting additional component from a heap of material after the heap has already been subjected to extraction of at least some of the component by prior heap leaching, the method comprising:

excavating a well into an identified portion of the heap, determined from analyzing data comprising geophysical survey data to be deficient in extraction of the component in that following the prior heap leaching the extraction of the component in the identified-~~identical~~ portion is low in comparison to average extraction of the component from the heap; and through the well, remedially treating the identified portion of the heap to improve the extraction of the component from the identified portion of the heap, wherein the remedially treating comprises:

- (i) hydraulic fracturing the heap within the identified portion of the heap; and
- (ii) after the hydraulic fracturing, treating the identified portion of the heap, the treating comprising introducing treating solution through the well into the identified portion of the heap and dissolving into the treating solution at least a portion of the component from the identified portion of the heap.

56. (Previously Presented) The method of Claim 55, wherein the material comprises a

metal-containing mineral and the component is a metal.

57. (Previously Presented) The method of Claim 56, wherein the metal is selected from the group consisting of copper, nickel, zinc, lead and cobalt.

58. (Previously Presented) The method of Claim 56, wherein the metal is gold.

59. (New) A method for extracting additional component from a heap of material after the heap has already been subjected to extraction of at least some of the component by prior heap leaching, the method comprising:

selectively remedially treating at least one indetified portion of the heap, comprising introducing treating solution into the identified portion of the heap through a well into the identified portion of the heap and dissolving into the treating solution at least a portion of the component from the identified portion of the heap;

wherein prior to the introducing the treating solution, the identified portion of the heap:

has been identified for selective remedial treatment from analyzing data comprising geophysical survey data to be deficient in extraction of the component in that following the prior heap leaching the extraction of the component in the identified portion is low in comparison to average extraction of the component from the heap; and has been hydraulically fractured through the well.

60. (New) The method of Claim 59, wherein the material comprises a metal-containing mineral and the component is a metal.

61. (New) The method of Claim 60, wherein the metal is selected from the group consisting of copper, nickel, zinc, lead and cobalt.

62. (New) The method of Claim 60, wherein the metal is gold.